



The use of ZIP and CART to model cryptosporidiosis in relation to climatic variables

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Abstract:

This research assesses the potential impact of weekly weather variability on the incidence of cryptosporidiosis disease using time series zero-inflated Poisson (ZIP) and classification and regression tree (CART) models. Data on weather variables, notified cryptosporidiosis cases and population size in Brisbane were supplied by the Australian Bureau of Meteorology, Queensland Department of Health, and Australian Bureau of Statistics, respectively. Both time series ZIP and CART models show a clear association between weather variables (maximum temperature, relative humidity, rainfall and wind speed) and cryptosporidiosis disease. The time series CART models indicated that, when weekly maximum temperature exceeded 31 degrees C and relative humidity was less than 63%, the relative risk of cryptosporidiosis rose by 13.64 (expected morbidity: 39.4; 95% confidence interval: 30.9-47.9). These findings may have applications as a decision support tool in planning disease control and risk-management programs for cryptosporidiosis disease.

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Resource Description

Early Warning System:

resource focus on systems used to warn populations of high temperatures, extreme weather, or other elements of climate change to prevent harm to health

A focus of content

Exposure :

weather or climate related pathway by which climate change affects health

Food/Water Quality, Meteorological Factors, Meteorological Factors, Precipitation, Temperature

Food/Water Quality: Pathogen

Geographic Feature:

resource focuses on specific type of geography

Other Geographical Feature

Other Geographical Feature : Subtropical

Climate Change and Human Health Literature Portal

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Australasia

Health Impact:

specification of health effect or disease related to climate change exposure

Infectious Disease

Infectious Disease: Foodborne/Waterborne Disease

Foodborne/Waterborne Disease: Cryptosporidiosis

Mitigation/Adaptation:

mitigation or adaptation strategy is a focus of resource

Adaptation

Model/Methodology:

type of model used or methodology development is a focus of resource

Outcome Change Prediction

Resource Type:

format or standard characteristic of resource

Research Article

Timescale:

time period studied

Time Scale Unspecified

Vulnerability/Impact Assessment:

resource focus on process of identifying, quantifying, and prioritizing vulnerabilities in a system

A focus of content